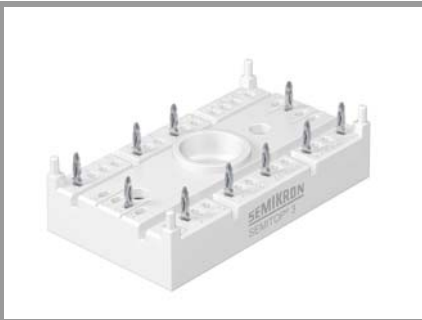


SK35GD12T4ETp



SEMITOP® 3 Press-Fit

IGBT module

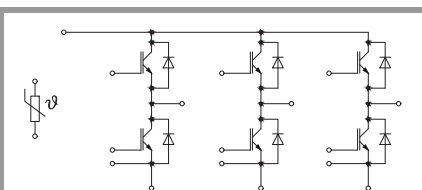
SK35GD12T4ETp

Features*

- One screw mounting module
- Solder free mounting with Press-Fit terminals
- Fully compatible with other SEMITOP® Press-Fit types
- Trench4 IGBT technology
- CAL4F technology FWD
- Integrated NTC temperature sensor
- UL recognized, file no. E 63 532

Typical Applications

- Motor Drives
- Servo Drives
- Air Conditioning
- Auxiliary Inverters
- UPS



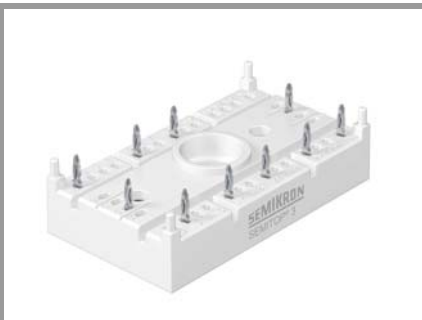
GD-ET

Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
IGBT 1			
V_{CES}	$T_j = 25\text{ °C}$	1200	V
I_C	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	38
		$T_s = 70\text{ °C}$	29
I_C	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	43
		$T_s = 70\text{ °C}$	35
I_{Cnom}		35	A
I_{CRM}	$I_{CRM} = 3 \times I_{Cnom}$	105	A
V_{GES}		-20 ... 20	V
t_{psc}	$V_{CC} = 800\text{ V}$ $V_{GE} \leq 15\text{ V}$ $V_{CES} \leq 1200\text{ V}$	$T_j = 150\text{ °C}$	10
T_j		-40 ... 175	°C

Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
Diode 1			
V_{RRM}	$T_j = 25\text{ °C}$	1200	V
I_F	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	34
		$T_s = 70\text{ °C}$	25
I_F	$T_j = 175\text{ °C}$	$T_s = 25\text{ °C}$	38
		$T_s = 70\text{ °C}$	30
I_{Fnom}		35	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	70	A
I_{FSM}	10 ms, sin 180°, $T_j = 150\text{ °C}$	170	A
T_j		-40 ... 175	°C

Absolute Maximum Ratings			
Symbol	Conditions	Values	Unit
Module			
$I_{t(RMS)}$	$\Delta T_{terminal}$ at PCB joint = 30 K, per pin	35	A
T_{stg}		-40 ... 125	°C
V_{isol}	AC, sinusoidal, t = 1 min	2500	V

SK35GD12T4ETp



SEMITOP® 3 Press-Fit

IGBT module

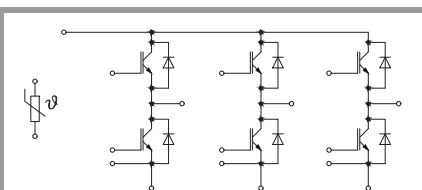
SK35GD12T4ETp

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Typical Applications

- Motor Drives
- Servo Drives
- Air Conditioning
- Auxiliary Inverters
- UPS

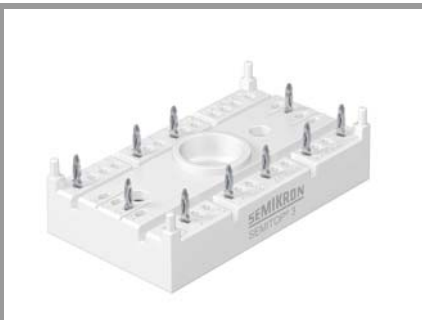


GD-ET

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
IGBT 1						
$V_{CE(sat)}$	$I_C = 35\text{ A}$ $V_{GE} = 15\text{ V}$ chiplinevel	$T_j = 25\text{ °C}$	1.85	2.10		V
		$T_j = 150\text{ °C}$	2.25	2.45		V
V_{CE0}	chiplinevel	$T_j = 25\text{ °C}$	0.80	0.90		V
		$T_j = 150\text{ °C}$	0.70	0.80		V
r_{CE}	$V_{GE} = 15\text{ V}$ chiplinevel	$T_j = 25\text{ °C}$	30	34		mΩ
		$T_j = 150\text{ °C}$	44	47		mΩ
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1.2\text{ mA}$		5	5.8	6.5	V
I_{CES}	$V_{GE} = 0\text{ V}$ $V_{CE} = 1200\text{ V}$	$T_j = 25\text{ °C}$		-	1	mA
				-		mA
C_{ies}	$V_{CE} = 25\text{ V}$ $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$		1.95		nF
C_{oes}		$f = 1\text{ MHz}$		0.155		nF
C_{res}		$f = 1\text{ MHz}$		0.115		nF
Q_G	$V_{GE} = -7\text{ V} \dots +15\text{ V}$			190		nC
R_{Gint}	$T_j = 25\text{ °C}$			0		Ω
$t_{d(on)}$	$V_{CC} = 600\text{ V}$	$T_j = 150\text{ °C}$		28		ns
t_r	$I_C = 35\text{ A}$ $V_{GE\ neg} = -7\text{ V}$ $V_{GE\ pos} = 15\text{ V}$	$T_j = 150\text{ °C}$		25		ns
E_{on}		$T_j = 150\text{ °C}$		3.2		mJ
$t_{d(off)}$	$R_{G\ on} = 22\text{ Ω}$ $R_{G\ off} = 22\text{ Ω}$	$T_j = 150\text{ °C}$		303		ns
t_f		$T_j = 150\text{ °C}$		70		ns
E_{off}	$di/dt_{on} = 2500\text{ A}/\mu\text{s}$ $di/dt_{off} = 1500\text{ A}/\mu\text{s}$ $dv/dt = 2900\text{ V}/\mu\text{s}$	$T_j = 150\text{ °C}$		3.3		mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$			1.21		K/W

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Diode 1						
V_F	$I_F = 35\text{ A}$ chiplinevel	$T_j = 25\text{ °C}$	2.30	2.62		V
		$T_j = 150\text{ °C}$	2.29	2.62		V
V_{F0}	chiplinevel	$T_j = 25\text{ °C}$	1.30	1.50		V
		$T_j = 150\text{ °C}$	0.90	1.10		V
r_F	chiplinevel	$T_j = 25\text{ °C}$	29	32		mΩ
		$T_j = 150\text{ °C}$	40	43		mΩ
I_{RRM}	$I_F = 35\text{ A}$	$T_j = 150\text{ °C}$		30		A
Q_{rr}	$di/dt_{off} = 2500\text{ A}/\mu\text{s}$	$T_j = 150\text{ °C}$		2		μC
E_{rr}	$V_{GE} = -7\text{ V}$ $V_{CC} = 600\text{ V}$	$T_j = 150\text{ °C}$		1.4		mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste} = 0.8\text{ W}/(\text{mK})$			1.55		K/W

SK35GD12T4ETp



SEMITOP® 3 Press-Fit

IGBT module

SK35GD12T4ETp

Features*

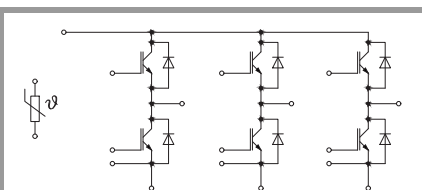
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- Integrated NTC temperature sensor
- UL recognized, file no. E 63 532

Typical Applications

- Motor Drives
- Servo Drives
- Air Conditioning
- Auxiliary Inverters
- UPS

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Module					
M_s	to heatsink	2.25		2.5	Nm
w	weight		30		g

Characteristics					
Symbol	Conditions	min.	typ.	max.	Unit
Temperature Sensor					
R_{100}	$T_r = 100\text{ °C}$		$493 \pm 5\%$		Ω
$B_{100/125}$	$R_{(T)} = R_{100} \exp[B_{100/125}(1/T - 1/T_{100})]$; T[K];		$3550 \pm 2\%$		K



GD-ET

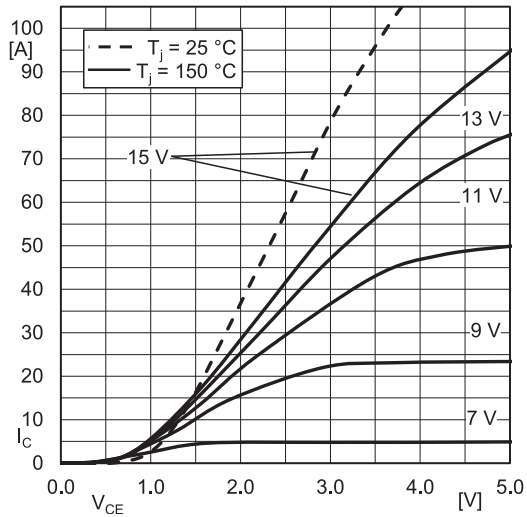


Fig. 1: Typ. IGBT1 output characteristic, incl. $R_{CC'+EE'}$

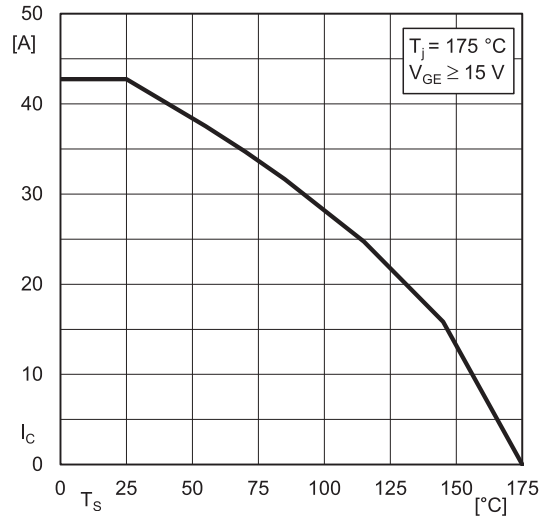


Fig. 2: Typ. rated current vs. temperature $I_C = f(T_s)$

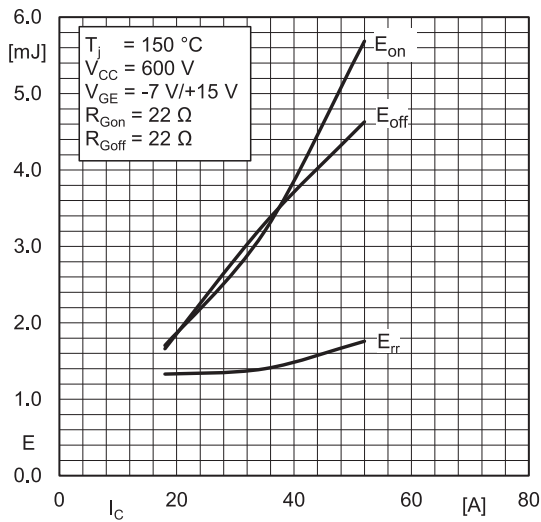


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

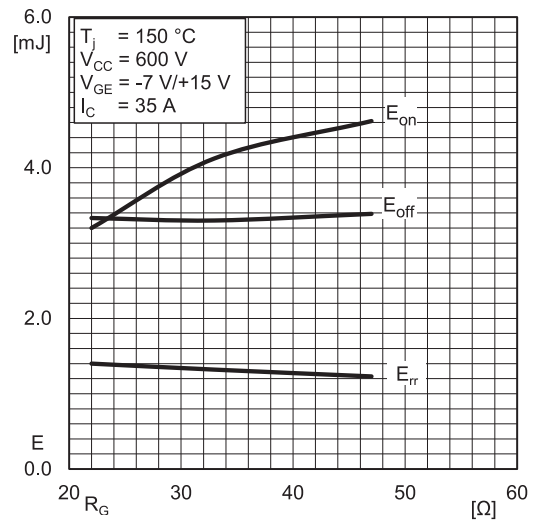


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

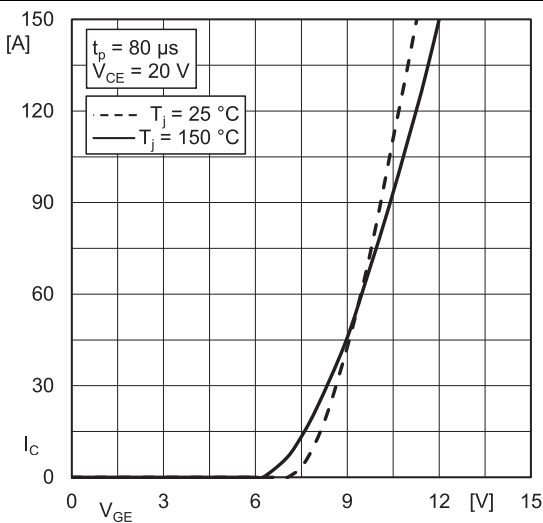


Fig. 5: Typ. IGBT1 transfer characteristic

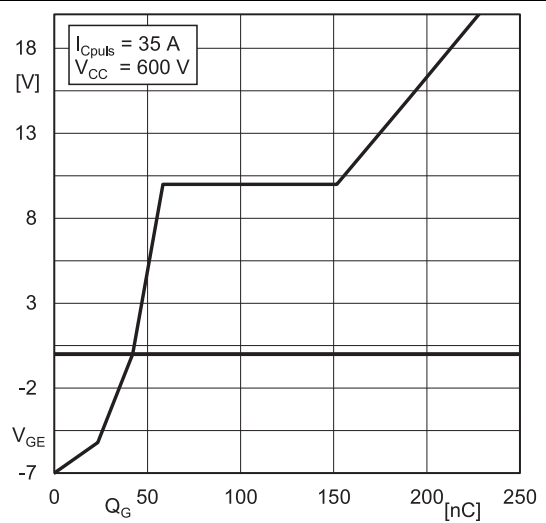


Fig. 6: Typ. gate charge characteristic

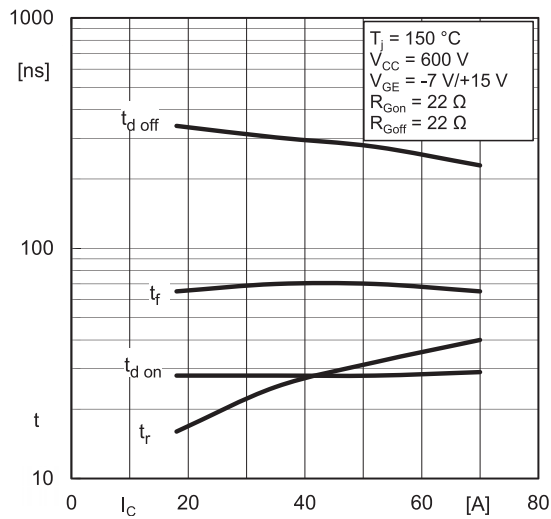


Fig. 7: Typ. switching times vs. I_C

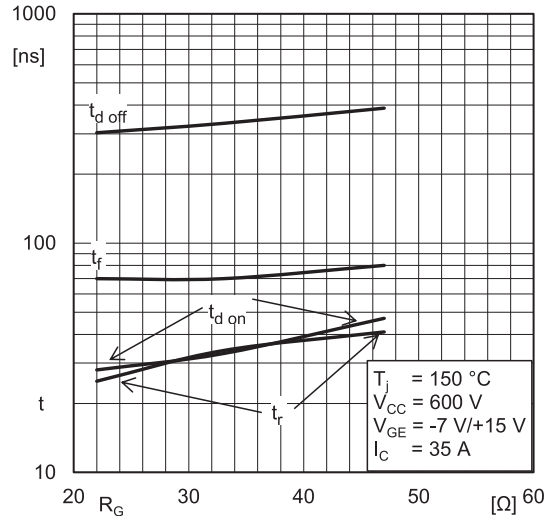


Fig. 8: Typ. switching times vs. gate resistor R_G

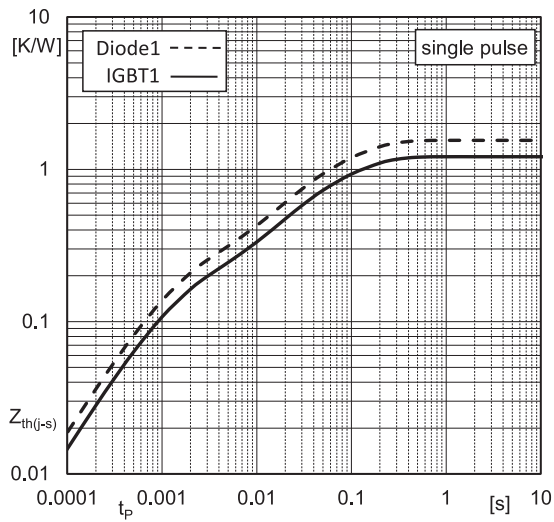


Fig. 9: Typ. transient thermal impedance

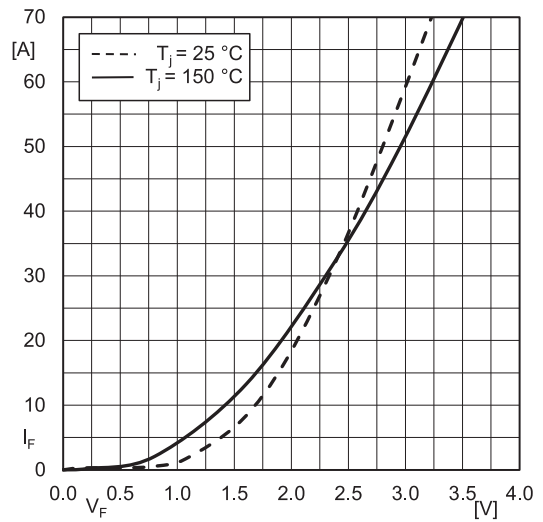
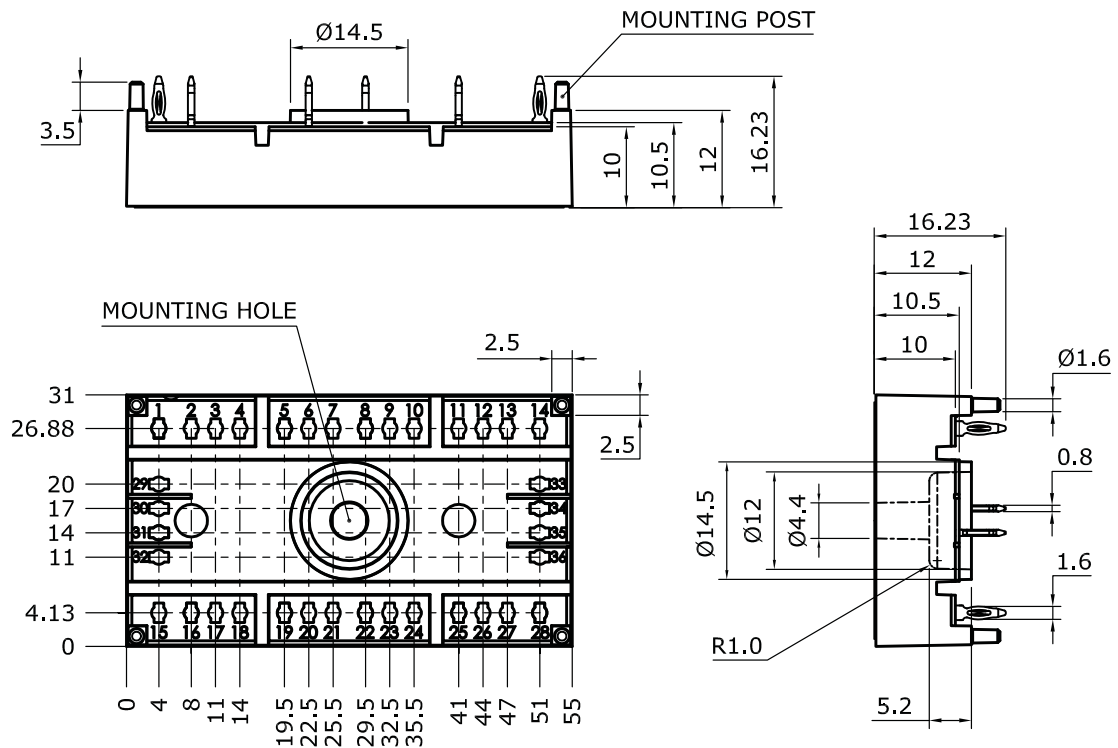


Fig. 10: Typ. CAL diode forward charact., incl. R_{CC+EE}

SK35GD12T4ETp

Dimensions: mm

Tolerance system: ISO 2768-m



Suggested drilled hole diameter for terminal pins in the circuit board:

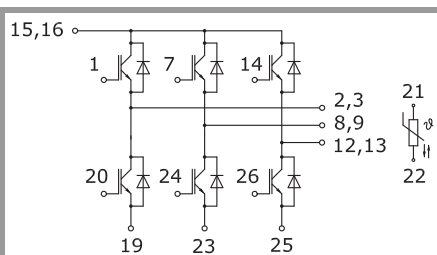
- minimum: 1.575 mm
- typical: 1.6 mm
- maximum: 1.625 mm

Suggested hole diameter for the mounting post in the circuit board:

- 2 mm

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SEMITOP 3 Press-Fit



GD-ET

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

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